

REMARKS

This Preliminary Amendment is filed with a Request for Continued Examination in response to the Final Rejection of November 15, 2006.

This Preliminary Amendment cancels independent claim 15 and presents two new independent claims 21 and 22. Claim 21 is directed to the embodiment of Figs. 2 and 3 and claim 22 to the embodiment of Figs. 4-7. New claims 23-32 are added that depend from claim 22 and parallel other claims dependent from claim 21.

In the new independent claims the guide plate has been defined to be that structure which has the upwardly facing deposition surface (rotor of cited prior art patent Chupka on which the claims have been rejected). In Chupka, the trailing edge of the screw is fixedly attached to a pumping vane 38, which vane is arranged on an upwardly facing deposition surface, but extends vertically thereto. The leading edge of the flight is arranged near the top of the screw (the screw of Chupka is designed and rotated for a downwardly directed operation effect - see Fig. 3), while in accordance with the present application, the screw has to move the matter upwardly. New claim 22 differs from Chupka by having a trailing edge of the guide plate arranged with vertical distance above and a horizontal distance to a leading take-up edge of the flight.

To further aid the Examiner's understanding of the invention, the indication of the location of the leading edge of a helical flight of the mixing screw is a significant feature of a feed mixer, especially for fresh cut grass or silage, which must be mixed with care and which must not be reduced in the length of stems or culm, and must not be compressed. Thus, mixing screws of feed mixers are commonly driven in a direction to loosen the feed by upward transport by the screw and falling downwardly by gravity.

In the Final Rejection the Examiner takes the position that the term "leading edge" and "trailing edge" are not structural features. It is not understood why the direction of rotation or the right or left hand of the screw would be regarded as a structural feature, and the definition of the location of that edge which is leading in the direction of rotation and that edge which is trailing in the direction of rotation would not. It should be noted that the present application will work both with left-hand or right-hand flights, provided that the edge of the flight which is leading in the

rotational direction is arranged adjacent the bottom. In addition, claim 1 of the principal reference to Chupka (column 8(k)) defines a trailing portion of the flight.

This direction of rotation is indicated in the present application by the reference character D defining the rotational direction, and by defining the ends of the helical flight screw as leading and trailing edges, respectively. Mixer screws like that of the present application take the feed from the bottom and guide it along the helical flight upwardly to the top of the screw from which the feed falls down by gravity loosening the feed and does not compress it, does not press out moisture, and greatly reduces the danger of damaging the culm or stems. Therefore the claims are proper.

The prior art patent to Chupka describes an apparatus for pulping high consistency papermaking stock which is adapted to reduce in size the individual particles of paper stock (see column 1, lines 29-32). For that reason, the screw is driven in a manner that the end of the helical flight at the top of the screw is the leading edge, is beaten into the matter, and presses the paper stock particle towards the bottom. A person skilled in the art would therefore not consider using any technical feature of a mixing screw which is designed for particle size reduction, to improve a feed mixer of the type of the present invention.

To explain further, Chupka describes screw flights including a trailing portion 54 which terminates at the base 46 of the conical body 42 adjacent the root 48 of a pumping vane 38. In the embodiment shown in Figs. 1 and 2, the trailing portions 54 are twisted so that their undersides 46 are contiguous with the face 58 of the pumping vane 38 so as to form a continuous surface therewith (see column 4, lines 60-66). Below the mixing screw a vane ring 34 is provided and supports a plurality of pulping vanes 36 which extend generally radially outwardly from the rotor body in circumferentially spaced relation to each other. Alternate vanes 36 are provided on top with a pumping vane 38 (column 4, lines 27-32). It is the vane ring which has an upwardly facing surface, while the pumping vane 38 is provided with an effective vane face 58 which extends essentially vertically and is facing spirally inwardly.

Claim 21 distinguishes over Chupka by being directed to a feed mixer, by a mixing screw having its leading edge arranged adjacent to the bottom of the mixing chamber, and by having the trailing edge of one of the guide plates fixedly attached to the leading edge of the flight.

New claim 22 patentably distinguishes over Chupka by being directed to a feed mixer, by a mixing screw having its leading edge arranged adjacent the bottom and having the trailing edge of one of the guide plates arranged at a vertical distance above and a horizontal distance to the leading take-up edge of the flight.

In the Final Rejection, the Examiner also referred to Blakley, U.S. 4,593,861. Blakley also describes an "apparatus for pulping paper". The apparatus includes a mixing screw which is adapted to develop zones of intense hydraulic sheer constituting the major force for effecting the desired defibering (see last sentence of the Abstract). The apparatus of Blakley includes a rotor 20 having a circular plate 22 which is provided with three vanes 25 each having a leading end 34. The feed screw 40 is mounted in the center of the rotor body 22. The lower ends of the screw flights 42 are spaced a substantial distance above the bottom of the rotor body (column 5, lines 5-15) and thus, at least partly, above the vanes 26. The outer radius of the screw flights 42 is substantially less than the minimum radial distance from the center of the rotor to the vanes 25, so that there is substantial space between the screw flights and the rotor body as well as the upper surfaces of the vanes 25 (see column 6, lines 20-25). Regarding Fig. 2 and the arrangement of the leading ends 34, a counterclockwise rotation of the rotor could be stated. Thus, as also shown in Fig. 2, the upper edge of the flight of the screw is the leading edge, while the edge adjacent the bottom or rotor body 22 is the trailing edge.

Independent claims 21 and 22 differ from and patentably distinguish over Blakley by being directed to a feed mixer, by having a mixing screw which has its leading edge of the flight arranged adjacent to the bottom of the mixing chamber and by being dimensioned to have its greatest distance to the rotational axis at the leading edge and the tapers upwardly, by being provided with at least two guide plates with an upwardly facing deposition surface, with the trailing edge of one of the guide plates either fixedly attached to the leading edge of the flight or arranged at a vertical distance above and a horizontal distance to the leading take-up edge of the flight.

Prompt and favorable action is requested.

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